

LI.—Note on a new Snow-Vole from Montenegro [*Microtus* (*Chionomys*) *bogdanovi*, sp. n.]. By V. and E. MARTINO.

Type-locality.—Cetinje, Montenegro. Alt. 680 m.

Geographical distribution.—At present known only from type-locality.

Diagnosis.—Upper parts smoke-grey without brownish tinge. Underparts whitish grey. Hind foot more than 23 mm. Tail nearly as long as $\frac{3}{4}$ head and body, bicolor except the terminal part. Outer side of first loop of the anterior lower molar irregular (with one or two small concavities).

Measurements.—No. 279 (type of species), ♂: head and body 99.0 mm.; tail 74.0; hind foot 25.0; ear 15.0. No. 281, ♀: head and body 100.0; tail 77.0; hind foot 25.0; ear 15.5.

Cranial measurements of two specimens (male and female, the first the type):—

	♂ (type of spec.). Cetinje. No. 279. I. xii. 21.	♂. Cetinje. No. 281. 2. xii. 21.
	mm.	mm.
Greatest length	28.6	28.8
Zygomatic breadth	16.1	16.0
Interorbital constriction	4.8	4.7
Nasals	8.3	8.3
Diastema	7.8	7.8
Maxillary tooth-row	7.0	7.2
Mandibular tooth-row	7.1	7.1

Type in the British Museum.

Field Notes.—On the stony sides of mountains, covered here and there with brushwood of *Caprinus*, at the same places as the *Apodemus epimelas*, Nhr.

Comparatively rare.

LII.—A new *Trichostrongyle* Genus from an Armadillo, *Euphrectus villosus*. By R. J. ORTLEPP, M.A.*.

In December 1921 an Edentate—*Euphrectus* (*Dasyops*) *villosus*, Argentine—died in the Gardens of the Zoological Society, Regent's Park, London. From the intestine of this animal I collected a number of nematode parasites, which,

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from their size, colour, and general contour of the body, I take to be the same as that described by Parona and Stossich in 1901 as *Esophagostomum tuberculatum*, sp. n., from *Dasy-
pus villosus*, S. America. The description and figures of these workers are, however, very incomplete, and it seems desirable to attempt a redescription. This is all the more necessary, because Parona and Stossich unfortunately referred this parasite to a wrong genus.

The parasites were found irregularly distributed throughout the small intestine, and were easily seen because of their brilliant red colour. They were collected into normal saline, examined alive, and then killed by the hot 70% alcohol method. Afterwards they were transferred to glycerinated 70% alcohol. By allowing the alcohol to evaporate, the parasite eventually came to lie in pure glycerine. This procedure rendered the specimens sufficiently transparent for examination; but, in order to make out the details of the spicules, the males were cleared in Langeron's lacto-phenol.

Description.

Male.—The males have an average length of about 6.5 mm. and breadth .33 mm. The body is red and forms a spiral of three or four turns, of which only the last one or two coils straighten out when the animals are killed in hot alcohol.

The transverse cuticular striations (fig. 1, *a*) are well marked on the ventral surface, where they form a broad and conspicuous band commencing about 100 μ from the anterior end and extending almost halfway down the length of the worm; on the rest of the cuticle these striations are only faintly indicated, and in some places are difficult to see. Longitudinal striations are present, but are very faint.

The cuticle around the anterior end forms a vesicular swelling (fig. 1, *a* and *b*). This surrounds the head and is about 75 μ long by 55 μ broad. It is terminated behind by a deep constriction which completely encircles the body. Externally it shows about twenty very faint transverse striations. The rest of the cuticle is remarkable in that it is enormously inflated, this inflation being more pronounced on the dorsal surface, where it may reach a thickness of over 100 μ at about the middle of the body.

Lateral alæ are absent.

Cervical papillæ were not observed, although carefully looked for.

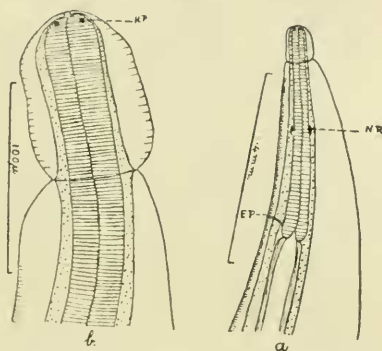
The anterior end of the worm bears four minute papillæ—two subdorsal and two subventral. These in cleared specimens stand out as clear and refringent dots.

The small oral aperture leads direct into the œsophagus, there being no indication of a mouth-capsule. The œsophagus (fig. 1 *a*) is straight, elongate, and slightly thickened posteriorly, measuring on an average about 450 μ long and 50 μ at its broadest part.

The nerve-ring is situated slightly in front of the middle of the œsophagus.

The position of the excretory pore does not appear to be constant, in that in some specimens it was situated at the level of the hind end of the œsophagus, whereas in others it

Fig. 1.



a. Anterior portion of *Trichostrongyle tuberculatum* (Parona and Stossich, 1901). *b.* Head, much enlarged.

E.P. = excretory pore; *N.R.* = nerve-ring; *H.P.* = head-papilla.

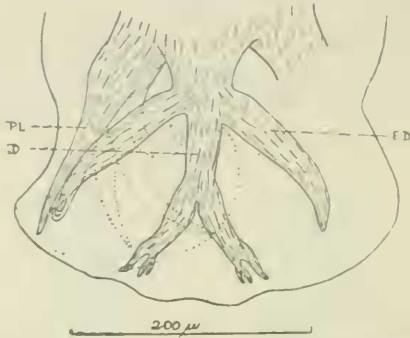
was pushed slightly forwards; the latter position, however, is the more common (fig. 1, *a*). From the pore the excretory duct passes almost vertically inwards, and on reaching the œsophagus bends abruptly backwards.

The bursa (figs. 2 and 3) is short and broad, and is about three times as broad as it is deep; posteriorly it is slightly notched in the mid-line, and a shallow depression on each side gives it a slight trilobed shape.

Of all the bursal rays the dorsal is the stoutest. This ray measures about 50 μ broad at its base and is about 200 μ long. After the origin from it of the externo-dorsal rays it is only about half this thickness. About midway between the origin of the externo-dorsal rays and its tip it divides into two branches, and each of these latter is again split at its tip. Each inner terminal branchlet bears on its inner side a much thinner and parallel twig.

The externo-dorsal ray is stout and slightly arched. Its maximum thickness ($28\ \mu$) is near its origin, after which it gradually tapers to an obtuse point. It terminates some

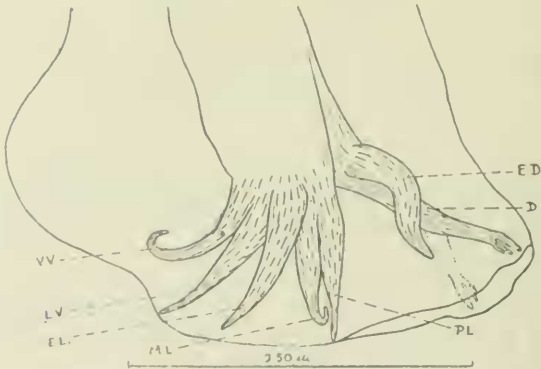
Fig. 2.



Dorsal view of bursa (lateral rays of right side not indicated).

D. = dorsal ray; *E.D.* = externo-dorsal ray; *P.L.* = postero-lateral ray.

Fig. 3.



Left lateral view of bursa.

D. = dorsal ray; *E.D.* = externo-dorsal ray; *E.L.* = externo-lateral ray; *L.V.* = latero-ventral ray; *M.L.* = medio-lateral ray; *P.L.* = postero-lateral ray; *V.V.* = ventro-ventral ray.

distance from the edge of the bursa. The postero-lateral and medio-lateral rays are almost parallel and of the same length and thickness; the former, however, is straight and passes to

the edge of the bursa, whereas the tip of the latter is sharply recurved dorsalwards. The externo-lateral ray is the thickest of the lateral rays, and is inclined slightly forwards and ventralwards, as also does the latero-ventral ray. The ventro-ventral ray is bent wholly in an arch directed forwards and inwards.

There are no prebursal papillæ.

The spicules (fig. 4) are of a brown colour; they are large, tubular, and equal in length. The base of each is bent outwards almost at right angles to the stem. They measure

Fig. 4.

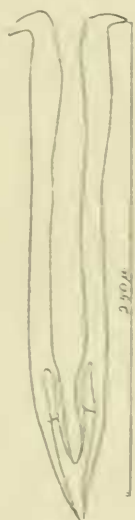


Fig. 5.

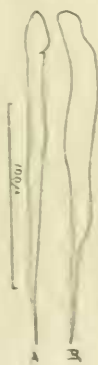


Fig. 4.—Spicules, dorsal view.

Fig. 5.—Gubernaculum. A=dorsal view; B=side view.

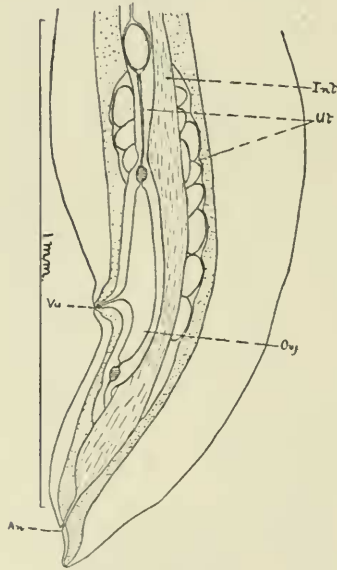
270μ in length by 18μ in maximum breadth; posteriorly each has a dorsal branch which is bent slightly ventralwards. Each branch bears on its inner surface, about in its middle, a ventrally projecting spike-like process.

The gubernaculum (fig. 5, A and B) is conspicuous, measuring about 140μ in length; posteriorly it is thickened into a knob 20μ long by 10μ broad; anteriorly it tapers to a rounded point. On its dorsal surface it bears a keel; this is about 14μ deep and extends for about half its length from the posterior end.

Female.—The average length of the female is about 8.75 mm., with a maximum breadth of about .5 mm. a little above the level of the vulva. It also possesses the general external characters of the male—*i. e.*, it is spirally coiled, red in colour, and the cuticle is very much inflated, with the striations as in the male. The vesicular swelling is slightly longer than in the male, measuring on the average $81\ \mu$ by $69\ \mu$; it also shows fine transverse striations.

Lateral alæ and cervical papillæ are absent.

Fig. 6.



Posterior end of female, seen from the left side.

An. = anus; *Int.* = intestine; *Ovj.* = ovjector; *Ut.* = uteri; *Vu.* = vulva

The mouth, which is also surrounded by four very small papillæ, leads into the œsophagus; this organ is straight and cylindrical in shape, slightly thicker behind. It is longer than that of the male, being on an average .52 mm. long. The nerve-ring, which encircles it, is situated about $220\ \mu$ from the anterior end.

The opening of the excretory pore is slightly in front of the junction of the œsophagus and intestine.

The vulva is situated towards the posterior end of the body (fig. 6); it is a slit-like aperture .45 mm. in front of the

anus. The vagina is short and straight, measuring only about $45\ \mu$ in length. It leads direct into the well-developed ovijectors. The ovijectors are straight and divergent, and the combined length of their muscular portions, including the sphincters, is about .45 mm.

The left uterus joins the anterior ovijector; the right uterus passes down the body more or less parallel to that of the right side, and extends further backwards than the posterior ovijector; having reached its posterior limit, it recurves sharply forwards and joins the posterior ovijector.

The coils of the ovaries extend into the anterior part of the body, the termination of the right ovary being situated slightly more than 1 mm. from the anterior end.

The eggs are large, oval, and thin-shelled, measuring $108\ \mu$ by $54\ \mu$; prior to being laid they already are in the morula-stage, and in females which were kept in normal saline overnight the eggs were observed to have embryonated *in utero*.

From the anus the body tapers abruptly to form a short tail, about $75\ \mu$ long.

Parona and Stossich, in their description of *Æsophagostomum tuberculatum*, write "Peculiari e curiosi sono i tubercoli della pelle, che le danno il carattere veramente specifico." In all the specimens from *Euphrectus (Dasypus) villosus* examined I was unable to find any indications of these tubercles either in living or preserved worms. I can thus only presume that the tubercles seen by them were artificial and due to poor fixation. Further, they state that the mouth is "circondata da un esilissimo cercone." This I was unable to see. The vesicular swelling of the head passes very slightly anterior to the mouth-aperture, and it would appear that the ring or cap surrounding the mouth observed by them must be this slight projecting portion of the vesicular swelling, which, at its junction with the mouth-aperture, may have the appearance of a chitinous ring.

They also mention the presence of three minute papillæ on the tip of the tail of the female, and, although I have repeatedly sought for these, I am unable to find any signs of them.

The entire absence of a mouth-capsule with its leaf-crown, and the nature of the spicules and bursa, are sufficient to show that this parasite does not belong to the genus *Æsophagostomum*, Molin, 1861. The mouth- and head-characters,

together with the presence of two ovaries &c. in the female, place it in the subfamily Trichostrongylinae, Leiper, 1908. This parasite differs widely from all known Trichostrongyle genera, its closest relation possibly being *Cooperia*, Ransom, 1907. It, however, differs from *Cooperia* in several respects, more especially in the shape of the dorsal ray and the relative thicknesses of the lateral rays of the bursa. The position of the vulva in this parasite is also quite different, in being placed much further back than in *Cooperia*.

I propose to designate this parasite as type-species of a new genus

TRICHOHELIX, gen. nov.,

of which the following may be taken as the chief characters:—

Trichostrongylinae. Body red and spirally coiled. Head round and thick, about $35\ \mu$ in diameter. Cuticle round head inflated to form a vesicular swelling, limited behind by a deep constriction encircling the neck. Rest of the cuticle strikingly inflated and showing marked transverse striations only on the anterior half of the ventral surface. Longitudinal striations faint. Lateral alae absent. Cervical papillae absent. Male bursa indistinctly trilobate. Dorsal ray stout, bifurcate, and its tips are tripartite. Tip of medio-lateral ray sharply recurved. Ventro-ventral ray strongly arched forwards and inwards. Spicules straight, tubular, equal, and of medium size; they are branched posteriorly. Gubernaculum present. Prebursal papillae absent. Vulva situated slightly in front of the anus. Ovíectors well developed and divergent. Uteri parallel. Eggs large, oval, and thin-shelled, measuring over $100\ \mu$ in length.

Type-species, *Trichohelix tuberculata*, Par. & Stoss., 1901.

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LIII.—*A new Cestode and other Parasitic Worms from Spitsbergen, with a Note on Two Leeches. Results of the Oxford University Expedition to Spitsbergen.—No. 6.*
By H. A. BAYLIS, M.A., D.Sc.

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THE parasitic worms collected by members of the Oxford University Expedition to Spitsbergen include a new and interesting Cestode from a seal, two species of Acanthocephala, and one of Nematoda. The writer is indebted to Mr. C. S. Elton for kindly handing this material to him for determination.

The following are the species contained in the collection:—

CESTODA.

CYCLOPHYLLIDEA.

Fam. Tetrabothriidæ.

Anophryocephalus anophrys, gen. et sp. n.

Host: a young female seal (*Phoca hispida*?). Locality: Klaas Billen Bay.

This interesting form agrees closely with typical species of the genus *Tetrabothrius* in its general anatomy, but differs strikingly from that genus in the structure of its scolex. In *Tetrabothrius* the scolex is always provided with "auricular appendages," more or less highly-developed, but in the present species such structures are entirely absent, the scolex having the general appearance of that of the Anoplocephalidæ or of certain unarmed genera of other families.

The material consists largely of fragments, but the length of a complete specimen appears to be about 65 mm. The maximum width of the strobila is about 0.85 mm. The dorso-ventral thickness is relatively great, so that some specimens are almost cylindrical in shape. The scolex (fig. 1) is somewhat compressed dorso-ventrally, and has a